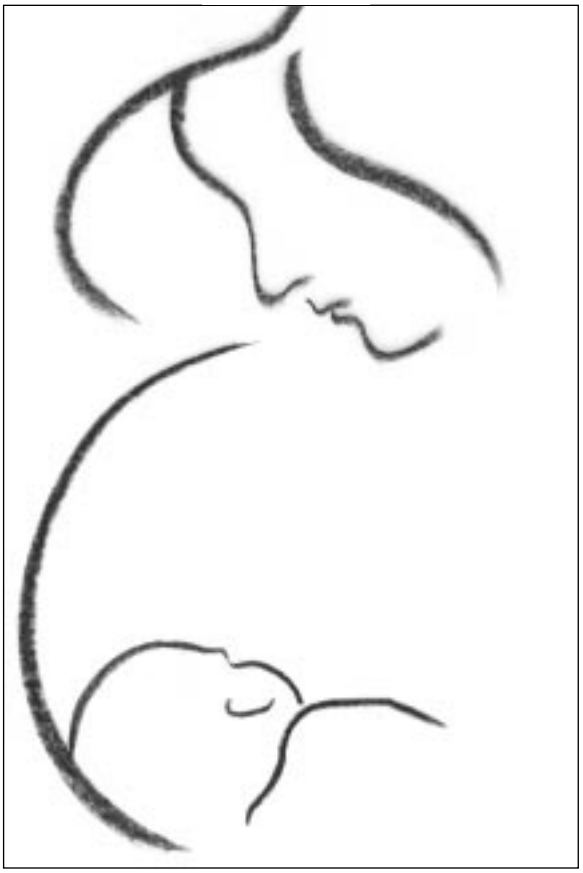
pregnancy nutrition



Surveillance

1996 Executive Summary

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Centers for Disease Control and Prevention

Pregnancy Nutrition Surveillance

Since 1979, the CDC Pregnancy Nutrition Surveillance System (PNSS) has monitored behavioral and nutritional risk factors among low-income pregnant women participating in public health programs. The PNSS was enhanced in 1989 when several variables were added to the system.

The number of states contributing to the system has varied. In 1996, 24 states contributed over 552,000 records; over 97% of these records were submitted by the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC program).

Sociodemographic Characteristics

In the 1996 PNSS, 56% of mothers were white, 24% black, 15% Hispanic, 2% American Indian, and 2% Asian or Pacific Islander. Over one-fourth of mothers were aged 19 years or younger. Fifty-five percent of mothers were unmarried, and 35% had less than a high school education; these proportions have remained stable since 1989.

To meet year 2000 national health objectives for maternal and child nutrition, concerted efforts are needed to convey nutrition and health promotion messages to women and to strengthen delivery of support services.

Maternal and Child Health Advances in the PNSS Population

- Incidence of very low birthweight just over 1% of births.
- Increase since 1989 in number of women enrolled in the WIC program and in first-trimester enrollment.
- Halt in decline, since mid-1980s, in proportion of women who choose to breastfeed.

Year 2000 Objectives Not Achieved in the PNSS Population

- Incidence of teenage pregnancy.
- Prevalence of overweight among women ≥20 years of age.
- Proportion of pregnant women achieving minimum recommended weight gain.
- Prevalence of anemia among black women in the third trimester of pregnancy.
- Incidence of low birthweight.
- Proportion of women who smoke during pregnancy.
- Incidence of breastfeeding among newborns.

Year 2000 objectives are from U.S. Department of Health and Human Services, Healthy People 2000: National Health Promotion and Disease Prevention Objectives. *Washington, DC: U.S. Department of Health and Human Services, Public Health Service, 1991; DHHS publication no. (PHS) 91-50212.*

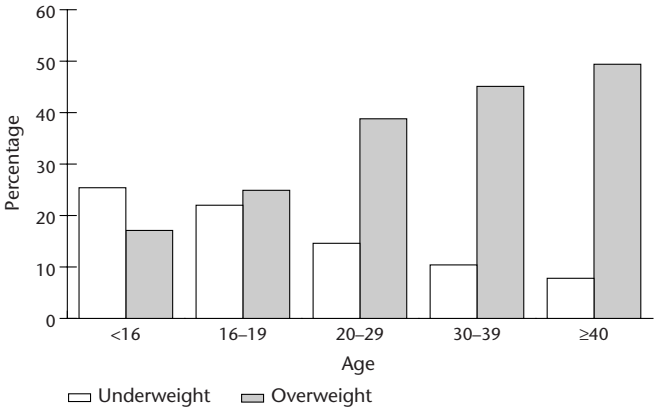
Prepregnancy Weight

Less than half of women in the 1996 PNSS had an ideal weight for height before pregnancy. The prevalence of prepregnancy overweight increased from nearly 30% in 1989 to 36% in 1996. Prepregnancy overweight also increased with advancing maternal age. The prevalence of overweight among women 20 years of age or older (40%) exceeded the year 2000 target (25%).

Studies suggest a strong association between prepregnancy underweight and having a low-birthweight baby. In the 1996 PNSS, 16% of women were underweight, and these women tended to be Asian or Pacific Islander, white, or aged 19 years or less. The prevalence of underweight declined slightly from 1989 to 1996.

Body mass index or BMI: weight in kilograms divided by height in meters squared. Overweight >26.0; underweight <19.8.

Prepregnancy underweight and overweight, by mother's age, 1996 PNSS



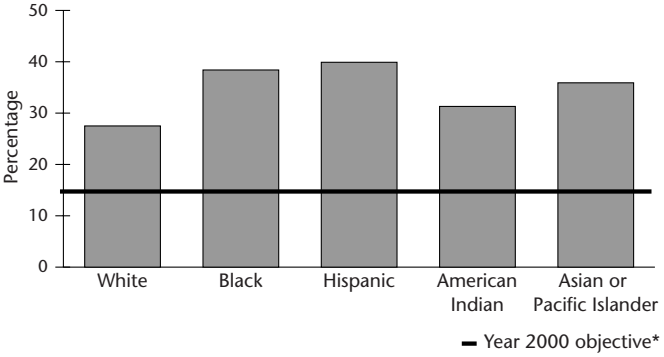
Gestational Weight Gain

Women who gain less than ideal weight during pregnancy are at increased risk for preterm birth and delivery of a low-birthweight infant. In the 1996 PNSS, 32% of women gained less weight during pregnancy than is recommended; thus, the related year 2000 objective was not achieved. White women were more likely to gain the minimum recommended weight than were women of other races or ethnicities.

About 28% of women gained more weight than recommended, which increased their risk of having a high-birthweight infant and possibly caused them difficulty returning to their prepregnancy weight after delivery.

Minimum recommended weight gain: underweight women, 28 pounds; normal weight women, 25 pounds; overweight women, 15 pounds.

Proportion of mothers who did not achieve minimum recommended weight gain during pregnancy, by race or ethnicity, 1996 PNSS



**Reduce to 15% the proportion of women who do not achieve minimum recommended weight gain during pregnancy. PNSS proportion: 32%.*

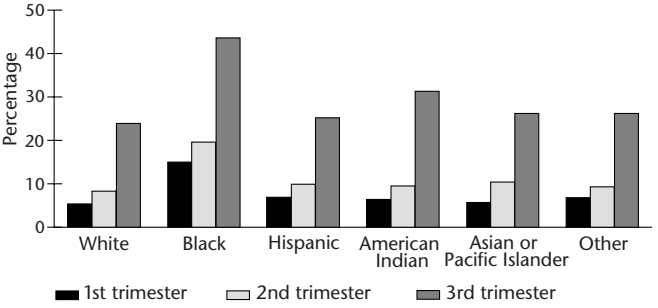
Anemia

Iron-deficiency anemia during the first two trimesters of pregnancy has been associated with inadequate gestational weight gain, a twofold risk of preterm delivery, and a threefold risk of delivering a low-birthweight infant.

In the 1996 PNSS, 8%, 12%, and 29% of women had anemia in the first, second, and third trimesters, respectively. This pattern of increasing prevalence of anemia may suggest worsening iron status throughout pregnancy. Forty-four percent of black women had anemia during their third trimester; the related year 2000 objective of 20% has not been achieved.

CDC criteria: 1st and 3rd trimester hemoglobin (Hgb) <11.0 g/dL or hematocrit (Hct) <33%; 2nd trimester Hgb <10.5 g/dL or Hct <32%.

Prevalence of anemia by trimester of pregnancy and race or ethnicity, 1996 PNSS*



** Data not available for Arizona.*

Prematurity and Birthweight

In the 1996 PNSS, almost 9% of infants were born preterm. These infants were 10 times more likely to be low birthweight than were infants born at term. Low-birthweight infants who survive are at increased risk for health problems, ranging from neurodevelopmental to respiratory disorders.

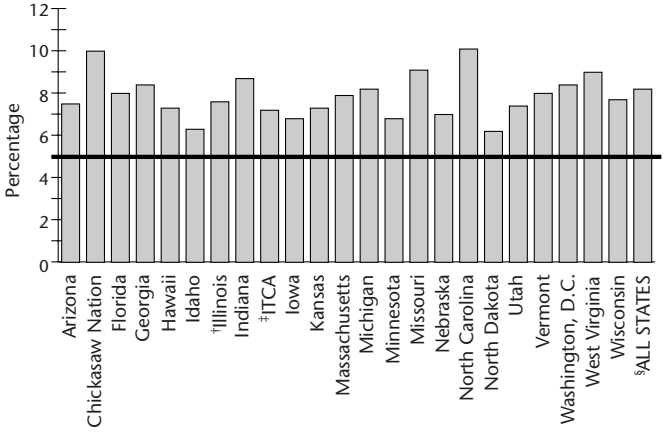
In the 1996 PNSS, just over 8% of infants were low birthweight, and just over 1% of these infants were also very low birthweight. The low-birthweight rate ranged from about 6% to 10% among states. The year 2000 target for low birthweight was not achieved, but the target for very low birthweight was nearly achieved.

Close to 9% of infants were high birthweight; rates ranged from 7% to almost 12% among states.

The incidence of both low birthweight and high birthweight remained fairly stable from 1989 to 1996.

Prematurity: <37 weeks gestation. Very low birthweight <1,500 g; low birthweight <2,500 g; high birthweight >4,000 g.

Incidence* of low birthweight, by state, 1996 PNSS



**Per 100 live births.*
†Data for this variable were missing from more than 20% of records.
‡Inter Tribal Council of Arizona.
§Data not available for Montana.
¶Reduce low birthweight to an incidence of no more than 5% of all live births.

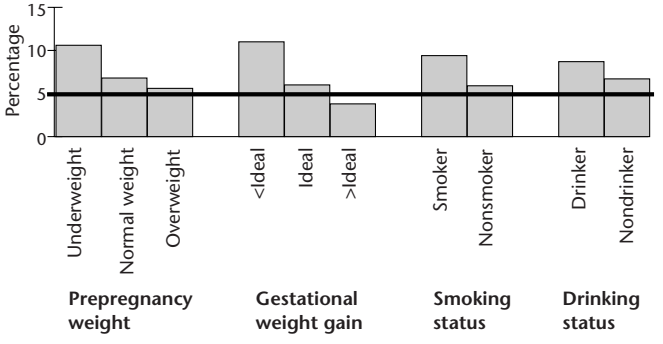
— Year 2000 objective¶

Risks Associated With Low Birthweight

In the 1996 PNSS, the risk of delivering a low-birthweight infant was nearly double for women who were underweight or did not gain adequate weight during pregnancy. Smoking or drinking during pregnancy also increased the risk of delivering a low-birthweight infant. Risk was increased for women who had multiple nutritional and behavioral risk factors.

The proportion of low-birthweight infants born to black women (about 10%) exceeded that of women of other races or ethnicities (5% to 6%). The risk of having a low-birthweight infant was high for women aged less than 19 years, similarly high for women 30 to 39 years, and even higher for women 40 to 49 years. Unmarried mothers and mothers with less than a high school education were also at higher risk of having a low-birthweight infant than were their counterparts.

Incidence* of low birthweight, by maternal risk factors, 1996 PNSS



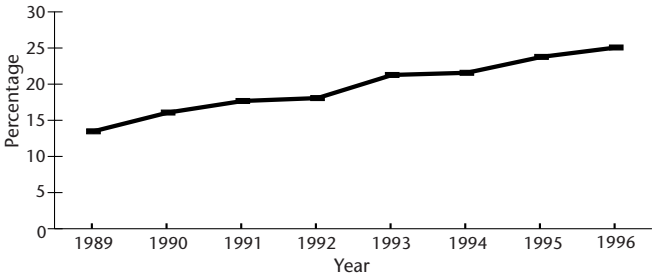
**Per 100 live births.*
†Reduce low birthweight to an incidence of no more than 5% of all live births.

— Year 2000 objective†

WIC Program Participation

Women who enroll in the WIC program receive prenatal care earlier and have improved dietary intake and prenatal weight gain than do women who do not enroll. Infants of enrollees are less likely to be premature and have a low birthweight. Benefits are most apparent for women who enroll early in pregnancy. The proportion of women in the PNSS who entered the WIC program in the first trimester of pregnancy increased from 13% to 25% from 1989 to 1996; however, in 1996, over 48% of women enrolled during their third trimester or after their baby was born.

Percentage of women who entered the WIC program during their first trimester of pregnancy, 1989–1996 PNSS



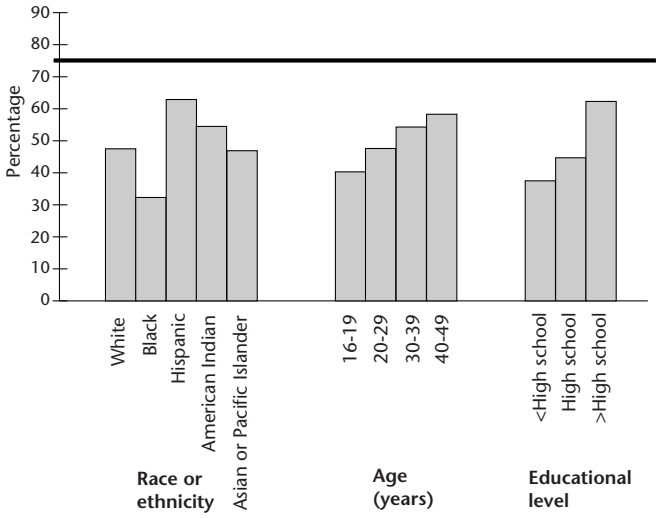
Breastfeeding

The nutritional, immunologic, hypoallergenic, economic, and psychological advantages of breastfeeding are well recognized. About 47% of infants in the 1996 PNSS were ever breastfed in the early postpartum period. The related year 2000 objective (75%) is far from being achieved.

Teenage mothers; black, white, or Asian or Pacific Islander mothers; and mothers with less than a high school education were less likely to breastfeed than were their counterparts. The prevalence of breastfeeding among mothers in the PNSS has changed little since 1989; however, this stability represents a halt to the decline in breastfeeding rates among low-income women in the middle to late 1980s.

Breastfeeding: infant ever breastfed in the early postpartum period.

Incidence of breastfeeding, by sociodemographic variables, 1996 PNSS



**Increase to at least 75% the porportion of mothers who breastfeed their babies in the early postpartum period.*

Smoking

Maternal smoking doubles the risk of delivering a low-birthweight infant. About 37% of women in the 1996 PNSS reported having smoked before pregnancy, and about 23% reported smoking during pregnancy. These rates are comparable with those from other sources. The highest prevalence of smoking during pregnancy was found for women aged 30 to 39 years, white women, women with a high school education or less education, and unmarried women.

The year 2000 objectives call for a reduction in smoking prevalence to no more than 10% among pregnant women.

Smoking: any smoking three months before pregnancy, during pregnancy, or during the early postpartum period.

A rigorous test of the nation's progress in maternal and child health is in the achievement of health objectives in populations at increased risk for poor pregnancy outcome and infant morbidity.

Recommendations

The PNSS data indicate that national and state public health programs are needed to support the following nutritional and behavioral interventions.

Nutritional Interventions

- Provision of preconception nutrition care to address prepregnancy nutritional risks such as overweight, obesity, and anemia.
- Outreach activities promoting early entry into prenatal care, including the WIC program.
- Encouragement of recommended prenatal weight gain.
- Promotion of adequate iron intake during pregnancy and screening to identify women at risk for iron deficiency.
- Establishment of breastfeeding as a societal norm.
- Implementation of strategies to reverse the rising trend of overweight among women.

Behavioral Interventions

- Continued efforts to improve the effectiveness of teenage pregnancy prevention initiatives.
- Provision of smoking cessation services for all pregnant women.
- Encouragement of abstention from alcoholic beverages during pregnancy, and access to rehabilitation services for all women who need them.

Nutrition Services and Research

- Broad-based public health initiatives comprising mass media campaigns, environmental changes, service delivery improvements, and social support networks.
- Intervention research to determine which strategies are successful in reducing risk and achieving the nutritional and behavioral interventions described above.

National and State Nutrition Monitoring

- Expansion of state, U.S. territory, tribal government, and managed care participation in the PNSS.
- Close collaboration between CDC and participating agencies to support system initiation and maintenance as well as improved data quality.

We acknowledge and thank all contributors to the Pregnancy Nutrition Surveillance System.

Complete information is in *Pregnancy Nutrition Surveillance, 1996 Full Report*. To receive a copy, contact the Maternal and Child Nutrition Branch, Division of Nutrition and Physical Activity, National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention, 4770 Buford Highway, NE, Mail Stop K-25, Atlanta, GA 30341-3717; telephone (770) 488-5702.